

# FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division



## 2010-2011 Influenza Season Week 13 ending April 2, 2011

*All data are preliminary and may change as more reports are received.*

**Synopsis:** During week 13 (March 27-April 2, 2011), influenza activity in the United States continued to decrease.

- Of the 3,616 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 399 (11.0%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) has been at or above the epidemic threshold for 10 consecutive weeks.
- Two influenza-associated pediatric deaths were reported, bringing the season total to 91. One of these deaths was associated with 2009 influenza A (H1N1) virus, and one was associated with an influenza A virus for which the subtype was not determined.
- The proportion of outpatient visits for influenza-like illness (ILI) was 1.6%, which is below the national baseline of 2.5%. All 10 regions reported ILI below region-specific baseline levels. All 50 states and New York City experienced minimal ILI activity and the District of Columbia had insufficient data to calculate an ILI activity level.
- The geographic spread of influenza in three states was reported as widespread; 17 states reported regional influenza activity; the District of Columbia and 19 states reported local influenza activity; Puerto Rico and 11 states reported sporadic influenza activity; Guam reported no influenza activity, and the U.S. Virgin Islands did not report.

## National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	Data for current week			Data cumulative since October 3, 2010 (Week 40)				
	Out-patient ILI†	% positive for flu‡	Number of jurisdictions reporting regional or widespread activity§	A (H3)	2009 A (H1N1)	A (Subtyping not performed)	B	Pediatric Deaths
<b>Nation</b>	Normal	11.0%	20 of 54	15,929	10,219	11,025	12,910	91
<b>Region 1</b>	Normal	27.1%	5 of 6	1,646	870	89	375	3
<b>Region 2</b>	Normal	18.2%	2 of 4	721	347	1,086	380	9
<b>Region 3</b>	Normal	18.9%	1 of 6	2,880	2,521	833	873	10
<b>Region 4</b>	Normal	8.3%	0 of 8	1,334	1,364	3,117	3,906	16
<b>Region 5</b>	Normal	32.9%	3 of 6	1,908	1,357	415	1,138	16
<b>Region 6</b>	Normal	7.2%	1 of 5	2,164	535	2,289	2,555	16
<b>Region 7</b>	Normal	15.1%	1 of 4	692	533	277	662	1
<b>Region 8</b>	Normal	14.6%	2 of 6	1,686	657	2,032	1,772	7
<b>Region 9</b>	Normal	11.9%	3 of 5	1,906	1,330	728	1,135	11
<b>Region 10</b>	Normal	25.0%	2 of 4	992	705	159	114	2

\*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, U.S. Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

‡ National data are for current week; regional data are for the most recent three weeks.

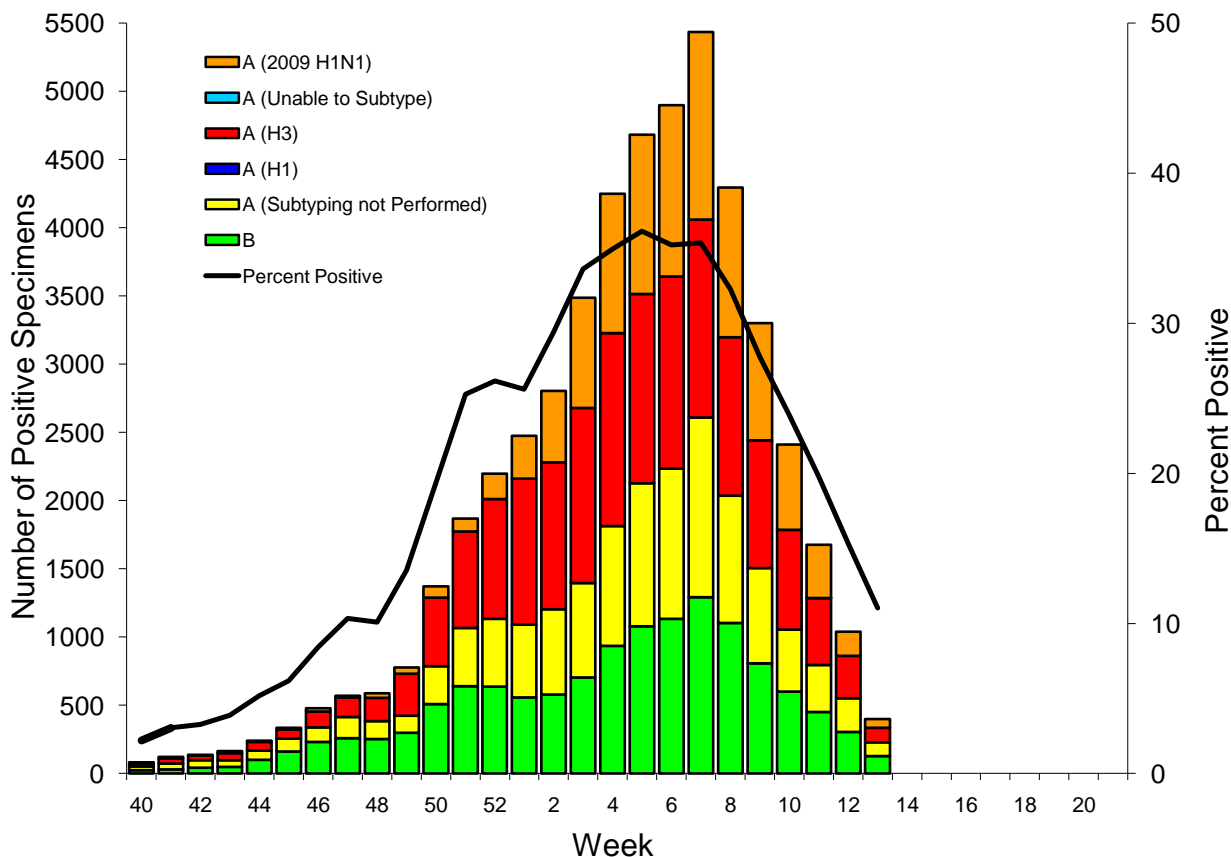
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

**U.S. Virologic Surveillance:** WHO and NREVSS collaborating laboratories located in all 50 states and Washington, D.C., report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

	<b>Week 13</b>
<b>No. of specimens tested</b>	3,616
<b>No. of positive specimens (%)</b>	399 (11.0%)
<b><i>Positive specimens by type/subtype</i></b>	
<b>Influenza A</b>	272 (68.2%)
<b>A (2009 H1N1)</b>	65 (23.9%)
<b>A (subtyping not performed)</b>	101 (37.1%)
<b>A (H3)</b>	106 (40.0%)
<b>Influenza B</b>	127 (31.8%)

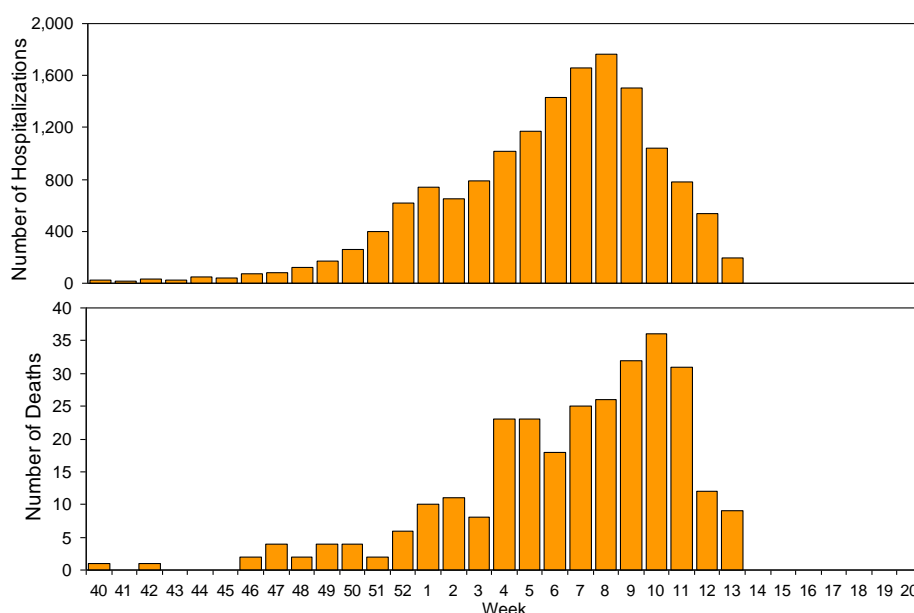
All influenza types and subtypes have been identified at high levels this season and continue to circulate widely. The predominant virus has varied by week, region, and even between states within the same region.

### Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2010-11 Season



**Aggregate Hospitalization and Death Reporting Activity (AHDRA):** This system tracks weekly counts of laboratory-confirmed influenza-associated hospitalizations and deaths and was implemented on August 30, 2009, during the 2009 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season is being continued on a voluntary basis, and 13 jurisdictions reported during week 13. From October 3, 2010 – April 2, 2011, 15,182 laboratory-confirmed influenza associated hospitalizations and 290 laboratory-confirmed influenza associated deaths were reported to CDC.

## Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, 2010-11 Season



**Antigenic Characterization:** CDC has antigenically characterized 1,556 influenza viruses [353 2009 influenza A (H1N1) viruses, 714 influenza A (H3N2) viruses, and 489 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

### 2009 Influenza A (H1N1) [353]

- Three hundred fifty-two (99.7%) of the 353 tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere. One virus (0.3%) of the 353 tested showed reduced titers with antiserum produced against A/California/7/2009.

### Influenza A (H3N2) [714]

- Six hundred eighty-five (95.9%) of the 714 tested were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Twenty-nine viruses (4.1%) of the 714 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

## **Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [489]**

### **Victoria Lineage [461]**

- Four hundred sixty-one (94.3%) of the 489 influenza B viruses tested belong to the B/Victoria lineage of viruses.
  - Four hundred sixty (99.8%) of these 461 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine.
  - One (0.2%) of these 461 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008.

### **Yamagata Lineage [28]**

- Twenty-eight (5.7%) of the 489 viruses were identified as belonging to the B/Yamagata lineage of viruses.

**Antiviral Resistance:** Testing of 2009 influenza A (H1N1), influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 influenza A (H1N1) clinical samples are tested for a single known mutation in the neuraminidase protein of the virus that confers oseltamivir resistance (H275Y). The data summarized in the table below combine the results of both test methods and include samples that were tested as part of routine surveillance purposes; it does not include diagnostic testing specifically done because of clinical suspicion of antiviral resistance.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 influenza A (H1N1) and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses) circulating globally. As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented weekly in the table below.

**Neuraminidase Inhibitor Resistance Testing Results  
on Samples Collected Since October 1, 2010.**

	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir
Seasonal Influenza A (H1N1)	0	0 (0.0)	0	0 (0.0)
Influenza A (H3N2)	586	1 (0.2)	586	0 (0.0)
Influenza B	485	0 (0.0)	485	0 (0.0)
2009 Influenza A (H1N1)	2,298*	17 (0.7)	348	0 (0.0)

\*Includes specimens tested at public health laboratories in six states (CA, ME, MD, MN, TX, and WA) who share testing results with CDC.

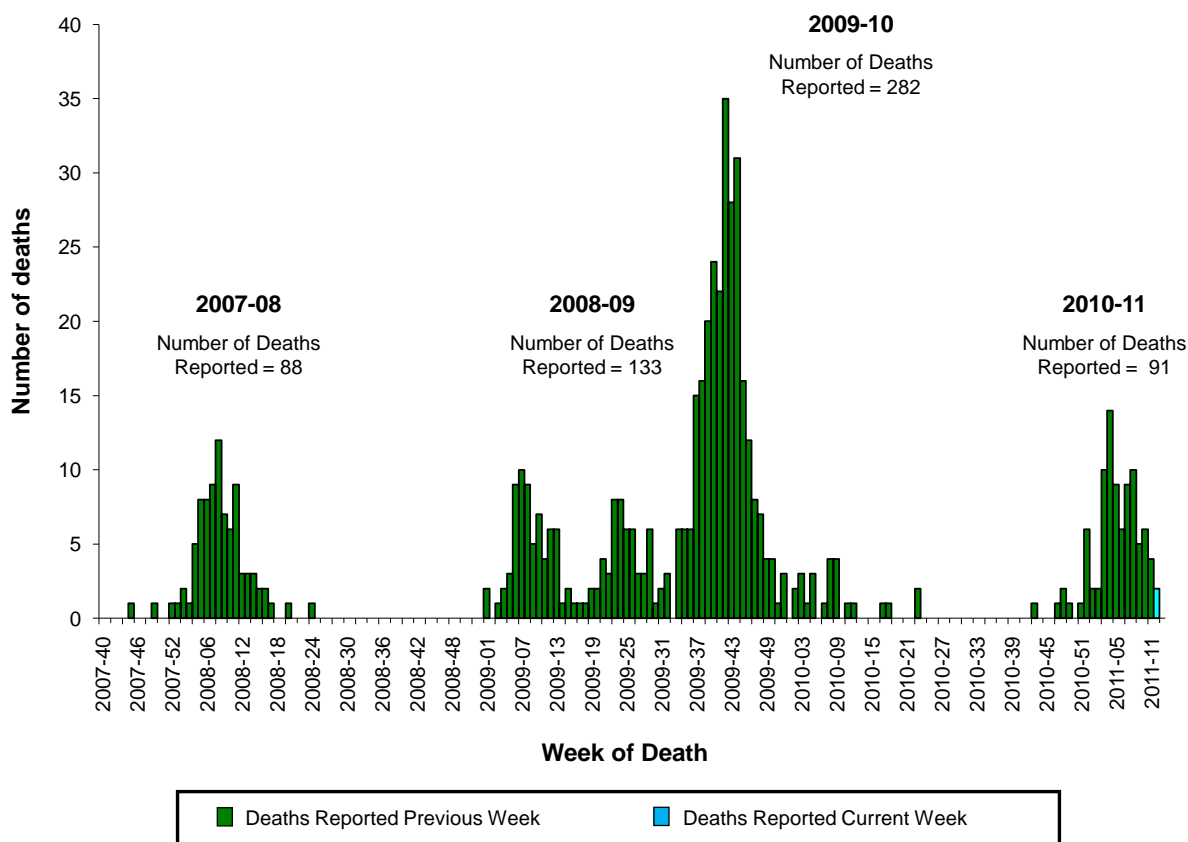
To prevent the spread of antiviral resistant virus strains, CDC reminds clinicians and the public of the need to continue hand and cough hygiene measures for the duration of any symptoms of influenza, even while taking antiviral medications. Additional information on antiviral recommendations for treatment and chemoprophylaxis of influenza virus infection is available at <http://www.cdc.gov/flu/antivirals/index.htm>.



**Influenza-Associated Pediatric Mortality:** Two influenza-associated pediatric deaths were reported to CDC during week 13. One of these deaths was associated with 2009 influenza A (H1N1) virus, and one was associated with an influenza A virus for which the subtype was not determined.

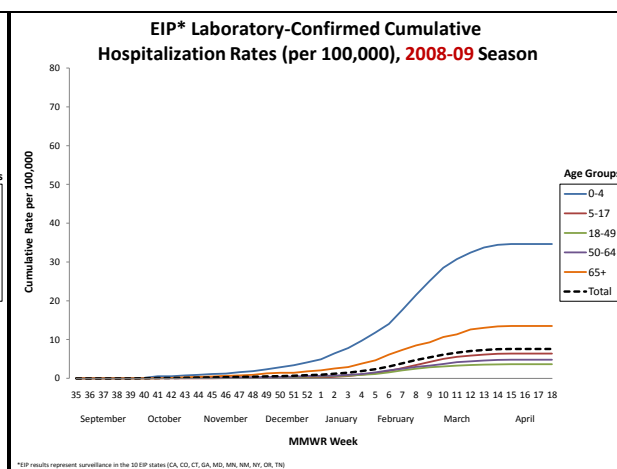
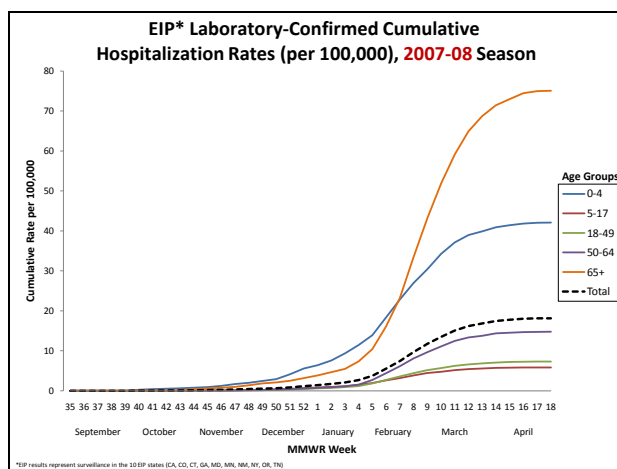
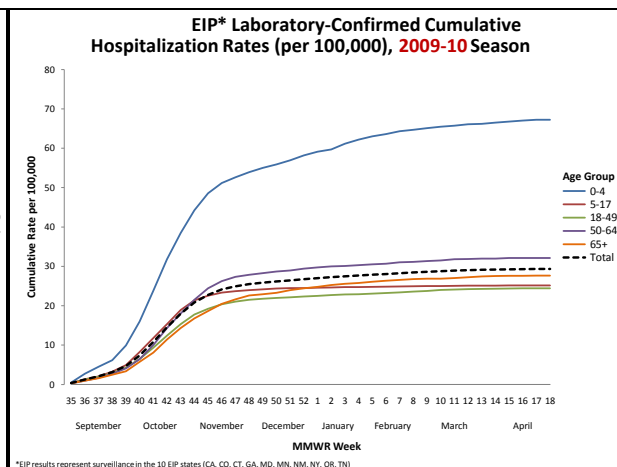
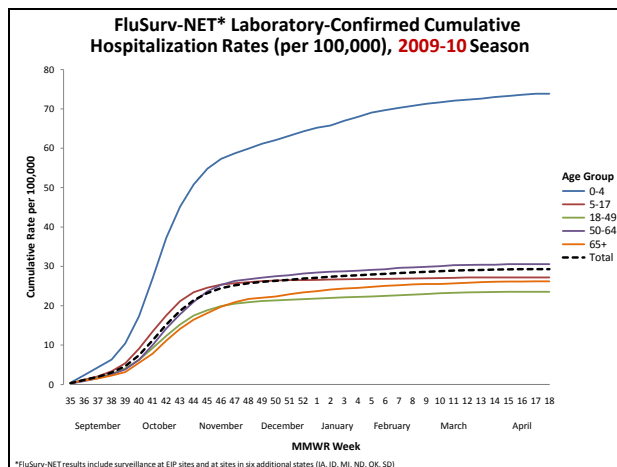
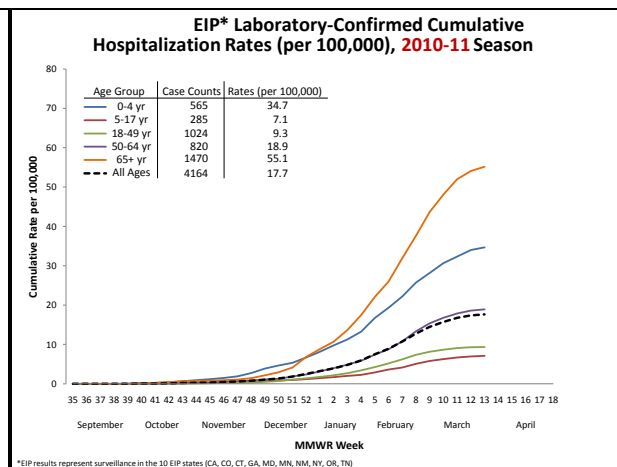
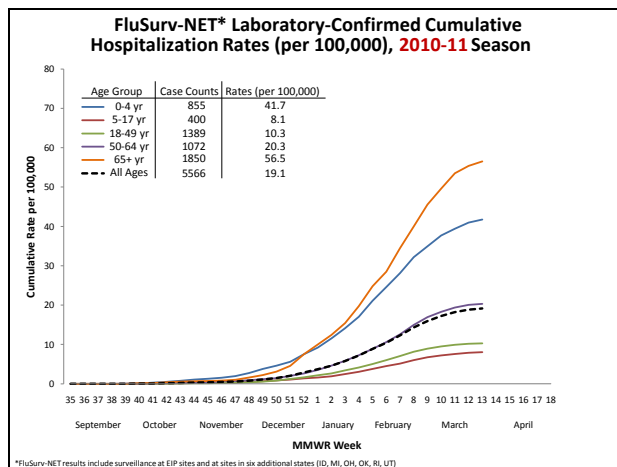
Ninety-one deaths from 33 states (Arizona, California, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin), Chicago, and New York City have been reported during this influenza season. Thirty-three of the 91 deaths reported were associated with influenza B viruses; 23 were associated with 2009 influenza A (H1N1) viruses; 17 deaths reported were associated with influenza A (H3N2) viruses, and 18 were associated with an influenza A virus for which the subtype was not determined.

### Number of Influenza-Associated Pediatric Deaths by Week of Death: 2007-08 season to present



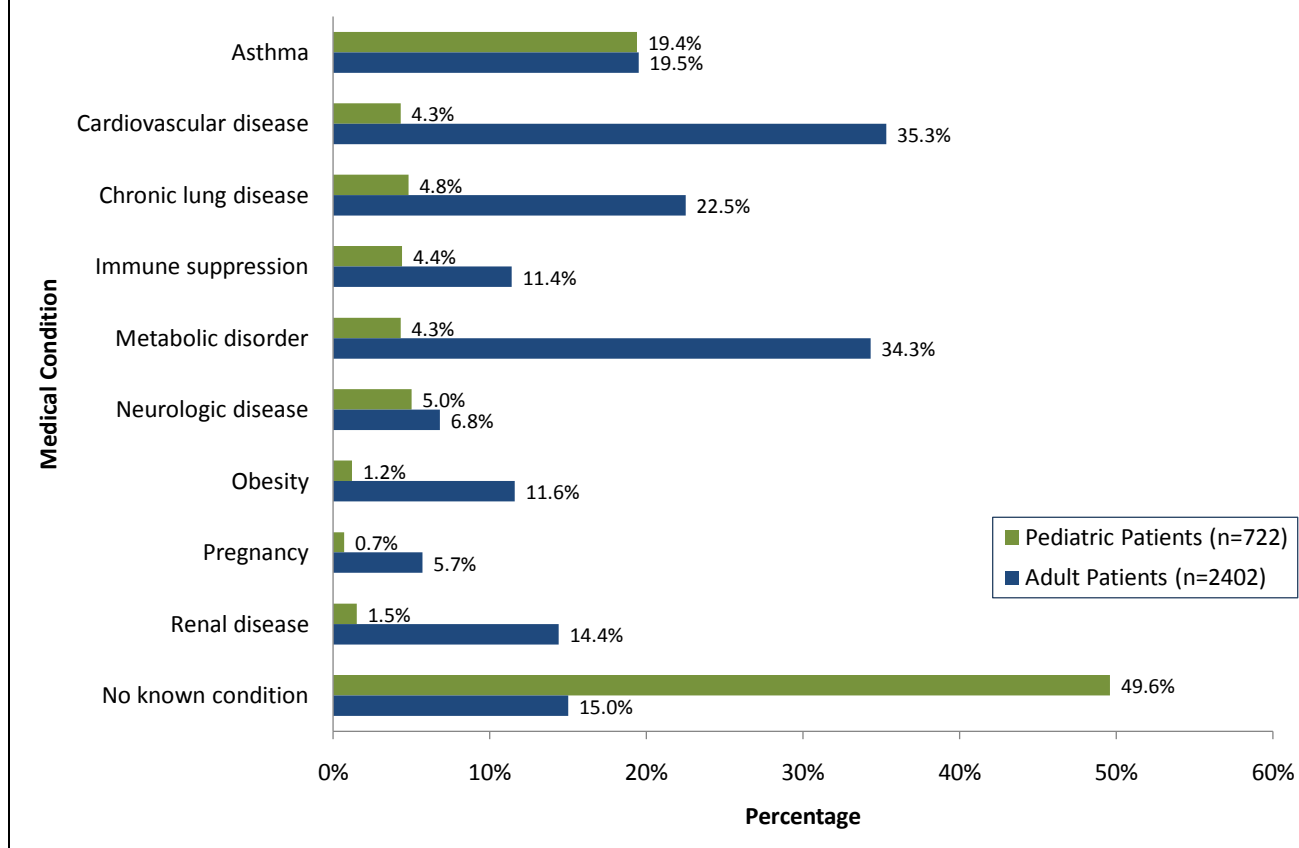
**Influenza-Associated Hospitalizations:** FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers over 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and six additional states (ID, MI, OH, OK, RI, and UT).

The current season's rates include cases from October 1, 2010 to April 2, 2011.



Please note the following: (i) The scale of the vertical axis on the Cumulative Hospitalization Rate figures will be adjusted during the season to make the graphs easier to read; (ii) FluSurv-NET was created during the 2009-2010 season when surveillance in six states was added to ongoing surveillance for influenza-associated hospitalizations in 10 EIP states. During the 2009-2010 season, FluSurv-NET included sites in the 10 EIP sites and sites in IA, ID, MI, ND, OK, and SD; (iii) the 2008-2009 EIP season ended April 14, 2009, due to the onset of the 2009 H1N1 pandemic.

## Selected underlying medical conditions<sup>1</sup> in patients hospitalized with influenza, FluSurv-NET 2010-2011<sup>2</sup>



<sup>1</sup>Asthma may include a diagnosis of asthma and reactive airway disease; Cardiovascular diseases may include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases may include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression may include conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders may include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases may include conditions such as seizure disorders, neuromuscular disorders, and cognitive dysfunction; Obesity was defined as a body mass index (BMI) greater than 30 kg/m<sup>2</sup> in patients 20 years of age or older, or equal to or greater than the 95<sup>th</sup> percentile of a patient's age and sex category in patients under 20 years of age; Renal diseases may include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

<sup>2</sup>Data as of April 5, 2011. Includes 3,124 (of a total 5,579 reported) cases for which data collection has been completed through the medical chart review stage.



**Demographic and clinical characteristics of laboratory-confirmed, influenza-associated hospitalizations identified in EIP<sup>1</sup> and FluSurv-NET<sup>2</sup> sites, 2006-2011**

	2010-2011 FluSurv-NET <sup>3</sup> N (%)	2009-2010 FluSurv-NET N (%)	2008-2009 EIP N (%)	2007-2008 EIP N (%)	2006-2007 EIP N (%)
<b>Total Cases</b>	5,579	7,517	1,698	3,930	1,279
<b><u>Age in Years</u></b>					
0-4	856 (15.3)	1,326 (17.6)	549 (32.3)	639 (16.3)	393 (30.7)
5-17	401 (7.2)	1,204 (16.0)	244 (14.4)	221 (5.6)	130 (10.2)
18-49	1,392 (25.0)	2,779 (37.0)	374 (22.0)	736 (18.7)	246 (19.2)
50-64	1,073 (19.2)	1,458 (19.4)	201 (11.8)	585 (14.9)	155 (12.1)
65+	1,853 (33.2)	750 (10.0)	330 (19.4)	1,749 (44.5)	355 (27.8)
<b><u>Sex</u></b>					
Male	2,598 (46.6)	3,517 (46.8)	832 (49.0)	1,825 (46.4)	631 (49.3)
Female	2,976 (53.3)	4,000 (53.2)	866 (51.0)	2,104 (53.5)	648 (50.7)
<b><u>Flu Type and Subtype</u></b>					
Influenza A	4,580 (82.1)	7,355 (97.8)	1,236 (72.8)	2,562 (65.2)	1,082 (84.6)
Specimens subtyped <sup>4</sup>	1,408	5,325	--	--	--
A (H1)	0 (0.0)	0 (0.0)	--	--	--
A (H3)	927 (65.8)	3 (0.1)	--	--	--
A (2009 H1N1)	481 (34.2)	5,322 (99.9)	--	--	--
Influenza B	868 (15.6)	52 (0.7)	382 (22.5)	1,199 (30.5)	149 (11.6)
<b>Intensive Care Unit</b>	521 (16.7)	1,560 (20.8)	298 (17.6)	495 (12.6)	198 (15.5)
<b>Mechanical Ventilation</b>	231 (7.4)	758 (10.1)	157 (9.2)	252 (6.4)	111 (8.7)
<b>Diagnosis of Pneumonia</b>	865 (27.7)	2,804 (37.3)	407 (24.0)	1,220 (31.0)	404 (31.6)
<b>Died</b>	76 (2.4)	222 (3.0)	49 (2.9)	104 (2.6)	24 (1.9)

Columns may not sum to 100% due to missing or unknown values.

<sup>1</sup>Surveillance in EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) was conducted from 2006-2011.

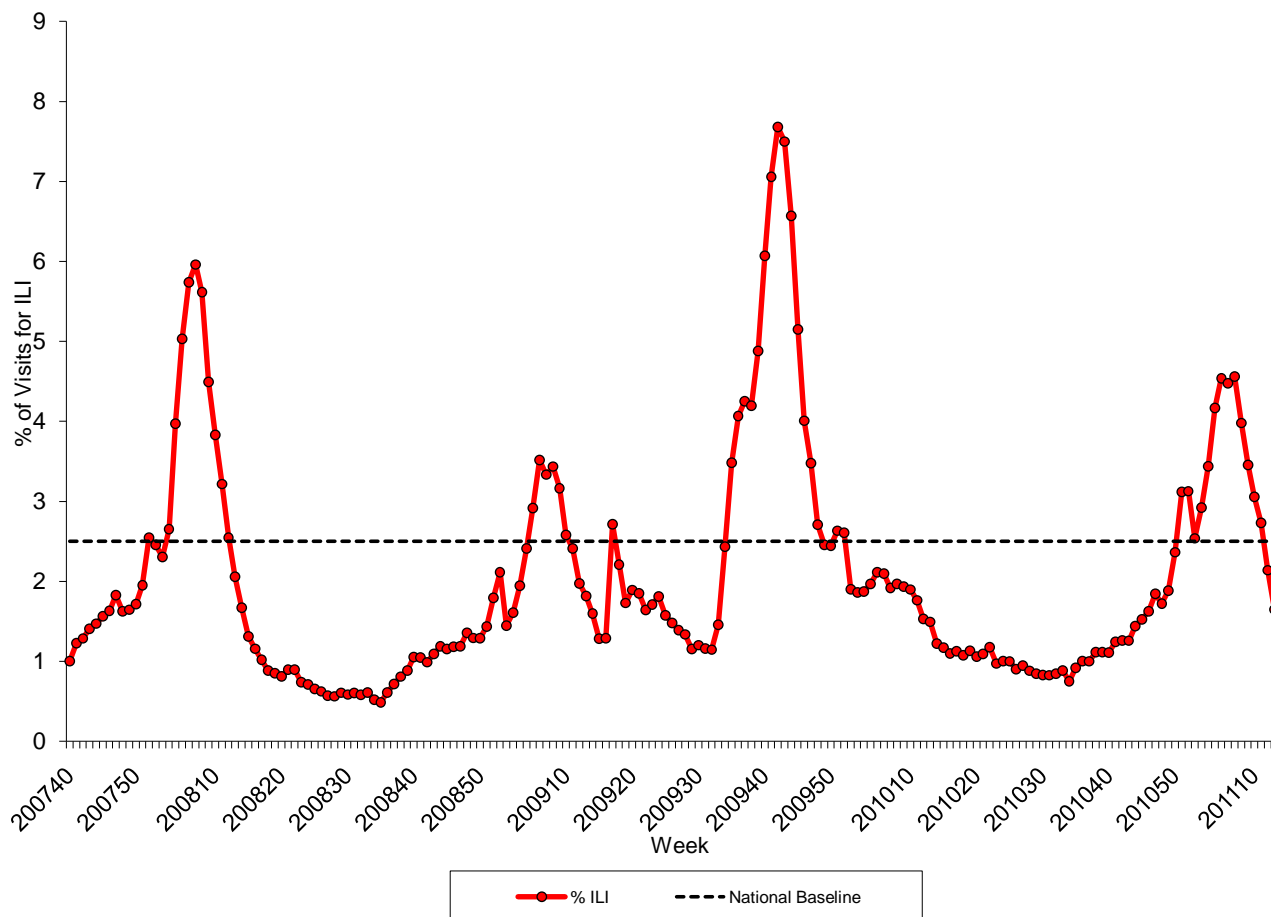
<sup>2</sup>FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

<sup>3</sup>Data as of April 5, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 3,124 (of a total 5,579 reported) cases for which data collection has been completed through the medical chart review stage.

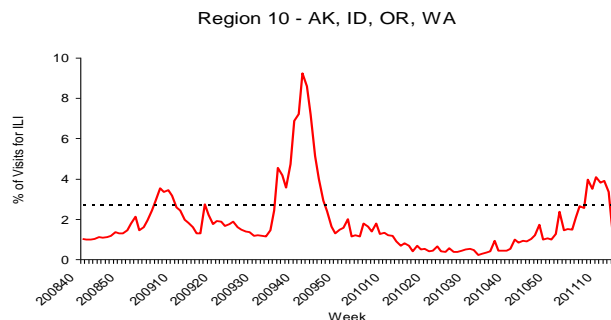
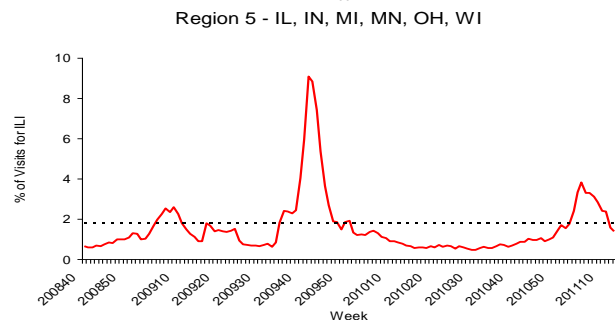
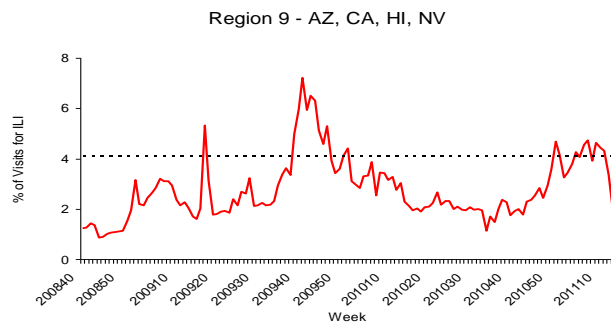
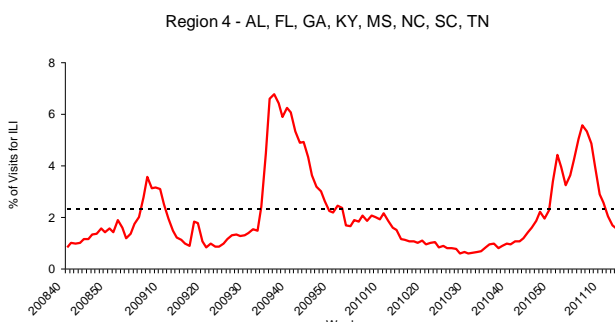
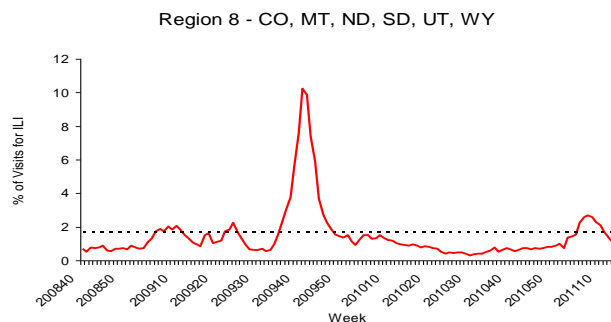
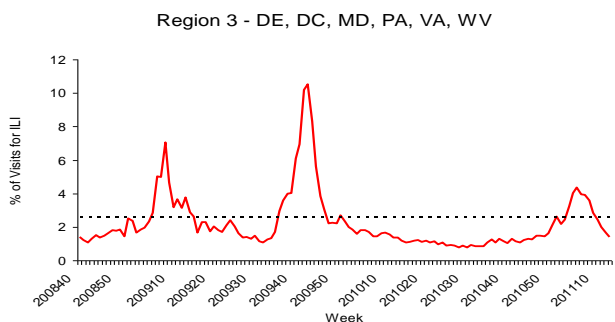
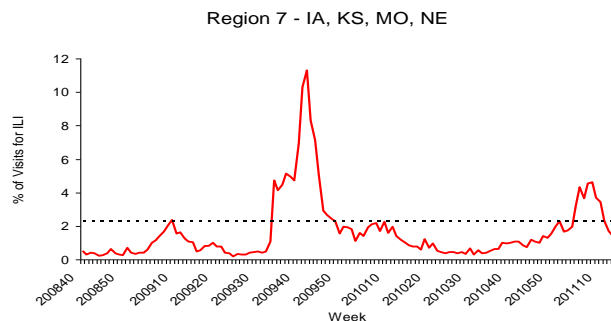
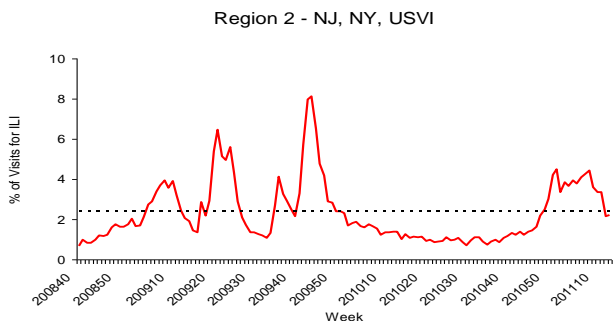
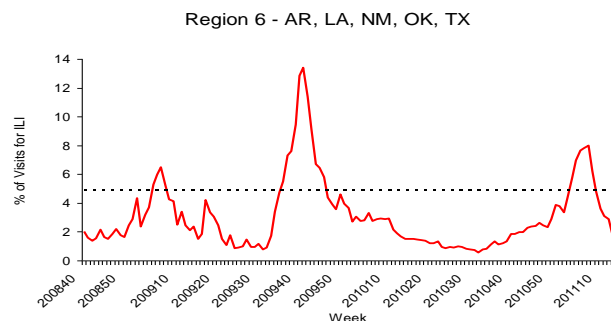
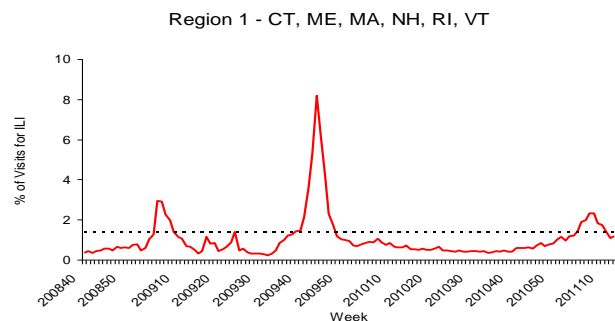
<sup>4</sup>Influenza A subtype results are available beginning with the 2007-2008 season. Percentages for influenza A subtypes are calculated using the number of influenza A specimens that were subtyped as a denominator.

**Outpatient Illness Surveillance:** Nationwide during week 13, 1.6% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.5%.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, September 30, 2007 – April 2, 2011



On a regional level, the percentage of outpatient visits for ILI ranged from 1.1% to 2.2% during week 13. All 10 regions reported ILI below region-specific baseline levels.



— % ILI      ..... Baseline\*

NOTE: Scales differ between regions

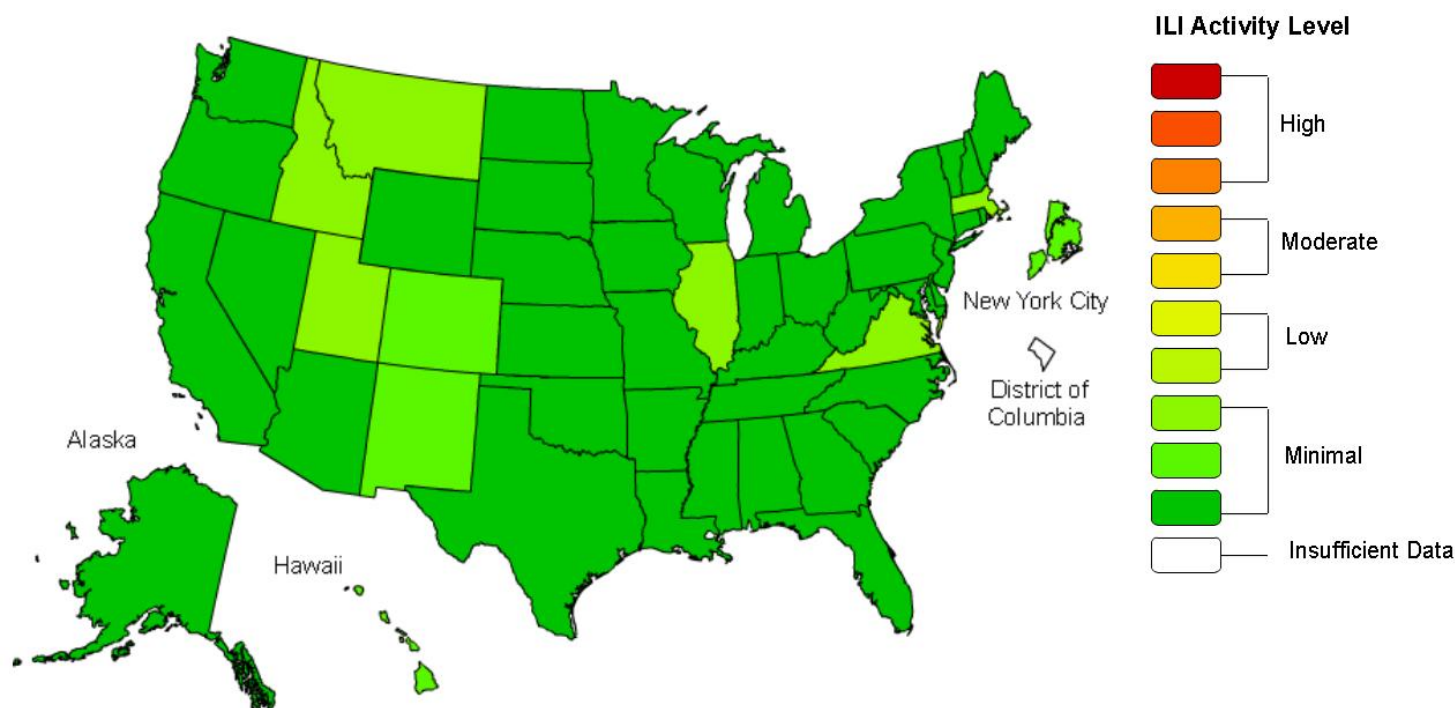
\*Use of the regional baselines for state data is not appropriate.

**ILINet State Activity Indicator Map:** Data collected in ILINet are used to produce a measure of ILI activity\* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than the average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clear picture of influenza activity in the United States.

During week 13, the following ILI activity levels were experienced:

- Minimal ILI activity was experienced by New York City and all 50 states.
- The District of Columbia had insufficient data to calculate an activity level.

### **Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet 2010-11 Influenza Season Week 13 ending Apr 02, 2011**



Interactive web tool available at: <http://gis.cdc.gov/grasp/fluview/main.html>

\*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.

Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

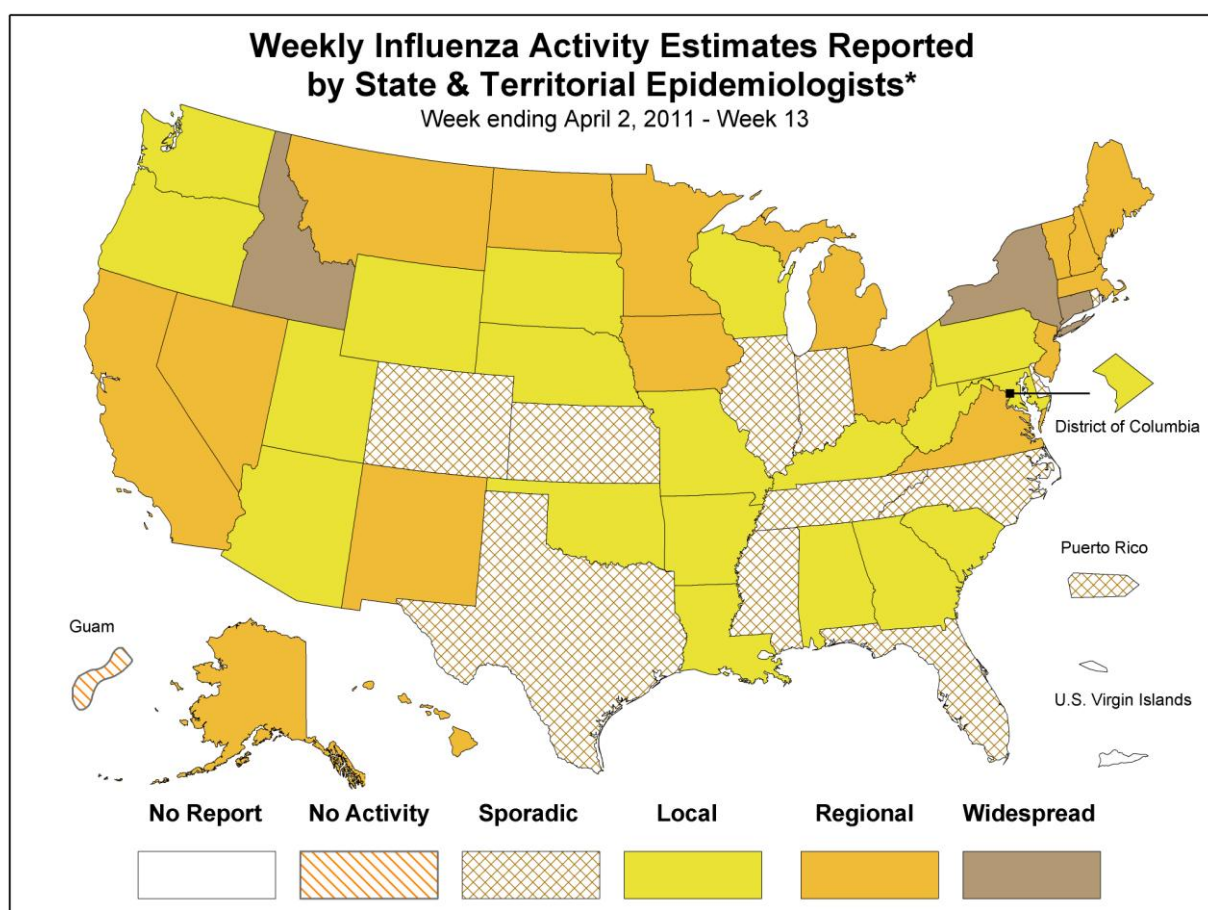
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

Differences in the data presented by CDC and state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

**Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists:** The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the severity of influenza activity.

During week 13, the following influenza activity was reported:

- Widespread influenza activity was reported by three states (Connecticut, Idaho, and New York).
- Regional influenza activity was reported by 17 states (Alaska, California, Hawaii, Iowa, Maine, Massachusetts, Michigan, Minnesota, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Vermont, and Virginia).
- Local influenza activity was reported by the District of Columbia and 19 states (Alabama, Arizona, Arkansas, Georgia, Kentucky, Louisiana, Maryland, Missouri, Nebraska, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Utah, Washington, West Virginia, Wisconsin, and Wyoming).
- Sporadic influenza activity was reported by Puerto Rico and 11 states (Colorado, Delaware, Florida, Illinois, Indiana, Kansas, Mississippi, North Carolina, Rhode Island, Tennessee, and Texas).
- Guam reported no influenza activity.
- The U.S. Virgin Islands did not report.



\* This map indicates geographic spread & does not measure the severity of influenza activity

## **Additional National and International Influenza Surveillance Information**

Distribute Project: Additional information on the Distribute syndromic surveillance project, developed and piloted by the International Society for Disease Surveillance (ISDS), now working in collaboration with CDC to enhance and support Emergency Department (ED) surveillance, is available at <http://isdsdistribute.org/>.

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the United States. For more information and activity estimates from the U.S. and worldwide, see <http://www.google.org/flutrends/>.

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe at <http://www.euroflu.org/index.php> and visit the European Centre for Disease Prevention and Control at [http://ecdc.europa.eu/en/publications/surveillance\\_reports/influenza/Pages/weekly\\_influenza\\_surveillance\\_overview.aspx](http://ecdc.europa.eu/en/publications/surveillance_reports/influenza/Pages/weekly_influenza_surveillance_overview.aspx).

Public Health Agency of Canada: The most up to date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>.

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available at <http://gamapserver.who.int/GlobalAtlas/home.asp>.

A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/overview.htm>  
Report prepared: April 8, 2011.